

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 July 2003 (10.07.2003)

PCT

(10) International Publication Number  
**WO 2003/055908 A3**

(51) International Patent Classification<sup>7</sup>: **C07K 16/18**,  
C12N 15/11, 15/12, C07K 14/47, C12N 5/10, A61K  
31/70, 39/395, 38/17, G01N 33/53, C12Q 1/68

(21) International Application Number:  
PCT/EP2002/014802

(22) International Filing Date:  
30 December 2002 (30.12.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
01830834.6 28 December 2001 (28.12.2001) EP

(71) Applicants and

(72) Inventors: **LEONE, Arturo** [IT/IT]; Via Domenico  
Fontana, 134/4, I-80128 Napoli (IT). **TURCO, Maria**,  
**Caterina** [IT/IT]; Via Errico, 37, I-83100 Avellino (IT).

(74) Agent: **GERVASI, Gemma**; Notarbartolo & Gervasi  
S.p.A., Corso di Porta Vittoria, 9, I-20122 Milan (IT).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,  
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK,  
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**  
— of inventorship (Rule 4.17(iv)) for US only

**Published:**  
— with international search report

(88) Date of publication of the international search report:  
11 March 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: BAG3 NUCLEOTIDE AND PROTEIN SEQUENCES TO BE USED IN RESEARCH, DIAGNOSTICS AND THERAPY FOR CELL DEATH-INVOLVING DISEASES

(57) Abstract: The present invention provides BAG3 nucleotide and protein sequences to be used in research, diagnostics and therapy for modulation of cell survival and/or death, in particular in leukemias, other neoplasias and apoptosis-involving diseases. More particularly the invention refers to the use of specific antisense-based constructs and peptide-specific polyclonal and monoclonal antibodies in leukemias, other neoplasias and cell death-involving diseases.



WO 2003/055908 A3

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 02/14802

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K16/18 C12N15/11 C12N15/12 C07K14/47 C12N5/10  
A61K31/70 A61K39/395 A61K38/17 G01N33/53 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE, SEQUENCE SEARCH

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 14106 A (BURNHAM INST) 16 March 2000 (2000-03-16) page 20, line 23 -page 21, line 2 page 23, line 6 -page 24, line 22; claims 24-29	1-29
X	WO 95 25125 A (US HEALTH) 21 September 1995 (1995-09-21) page 3, line 13 - line 19 page 4, line 32 -page 5, line 3 page 11, line 33 -page 12, line 4 page 13, line 33 -page 15, line 6 page 26, line 1 -page 30, line 7 page 31, line 16 - line 26 page 1, line 32 -page 2, line 5 -/--	1-29



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents :

- 'A' document defining the general state of the art which is not considered to be of particular relevance
- 'E' earlier document but published on or after the international filing date
- 'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- 'O' document referring to an oral disclosure, use, exhibition or other means
- 'P' document published prior to the international filing date but later than the priority date claimed

- 'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- 'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- 'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- '&' document member of the same patent family

Date of the actual completion of the international search

6 August 2003

Date of mailing of the international search report

21/08/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

van Heusden, M

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/14802

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 03, 31 March 1999 (1999-03-31) & JP 10 327872 A (OTSUKA PHARMACEUT CO LTD), 15 December 1998 (1998-12-15) abstract ---	1-29
X	LIAO Q ET AL: "The anti-apoptotic protein BAG-3 is overexpressed in pancreatic cancer and induced by heat stress in pancreatic cancer cell lines" FEBS LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 503, no. 2-3, 17 August 2001 (2001-08-17), pages 151-157, XP004300878 ISSN: 0014-5793 page 152, left-hand column, paragraph 6 ---	1-4,6-9, 16-27,29
A	TAKAYAMA S ET AL: "AN EVOLUTIONARILY CONSERVED FAMILY OF BAG-1-LIKE HSP70/HSC70 MOLECULAR CHAPERONE REGULATORS" BLOOD, W.B.SAUNDERS COMPAGNY, ORLANDO, FL, US, vol. 92, 15 November 1998 (1998-11-15), page 382A XP001027140 ISSN: 0006-4971 the whole document ---	1-29
P,A	DOONG HOWARD ET AL: "What's in the 'BAG'? : A functional domain analysis of the BAG-family proteins." CANCER LETTERS, vol. 188, no. 1-2, 15 December 2002 (2002-12-15), pages 25-32, XP002250169 ISSN: 0304-3835 the whole document ---	1-29
P,X	LEONE ARTURO ET AL: "Expression and regulation of Bag3 gene by metals and heat." FASEB JOURNAL, vol. 16, no. 5, 22 March 2002 (2002-03-22), page A903 XP009015247 Annual Meeting of Professional Research Scientists on Experimental Biology; New Orleans, Louisiana, USA; April 20-24, 2002, March 22, 2002 ISSN: 0892-6638 the whole document -----	1-4,6-9, 16-26,29

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 02/14802

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

**Continuation of Box I.1**

Although claim 24 covers subject matter directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compounds.

Although claims 24-26 cover subject matter directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compounds.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 02/14802

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0014106	A	16-03-2000	AU 6038399 A CA 2342027 A1 EP 1109824 A1 JP 2002524068 T WO 0014106 A1	27-03-2000 16-03-2000 27-06-2001 06-08-2002 16-03-2000
WO 9525125	A	21-09-1995	US 5652223 A AT 175212 T AU 684930 B2 AU 2126395 A CA 2185341 A1 DE 69507017 D1 DE 69507017 T2 DK 750637 T3 EP 0750637 A1 ES 2128048 T3 GR 3029811 T3 JP 9511236 T WO 9525125 A1 US 5981712 A	29-07-1997 15-01-1999 08-01-1998 03-10-1995 21-09-1995 11-02-1999 12-08-1999 30-08-1999 02-01-1997 01-05-1999 30-06-1999 11-11-1997 21-09-1995 09-11-1999
JP 10327872	A	15-12-1998	NONE	